July 8, 1998

Mr. Walter G. MacFarland IV
Senior Vice President
Clinton Power Station
Illinois Power Company
Mail Code V-275
P. O. Box 678
Clinton, IL 61727

SUBJECT: NRC RADIATION PROTECTION INSPECTION REPORT 50-461/98013(DRS)

Dear Mr. MacFarland:

On June 25, 1998, the NRC completed an inspection at your Clinton Nuclear Power Station. The enclosed report presents the results of this inspection.

This inspection was an examination of activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and with the conditions of your license. The inspection consisted of a selective examination of procedures and representative records, observations of work in progress and interviews with personnel. Specifically, the inspection focused on air sampling activities in support of the containment and drywell coatings work and the maintenance of whole body contamination monitoring and counting instrumentation.

Air sampling activities for the coatings work were properly performed and representative of work activities. However, we noted that your procedures did not instruct personnel when to perform air sampling and did not contain a formal process for tracking the assignment of lapel air samplers and associated sample analysis results. Your staff acknowledged these observations and was planning corrective actions. Oversight and maintenance of the whole body contamination monitoring and counting instrumentation was good, and weaknesses from a previous violation in this area were properly addressed.

No violations of NRC requirements were identified during this inspection.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response to this letter will be placed in the NRC Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/s/ R. N. Gardner (for)

John A. Grobe, Director
Division of Reactor Safety

Docket No. 50-461
License No. NPF-62

Enclosure: Inspection Report 50-461/98013(DRS)

cc w/encl: G. Hunger, Station Manager
R. Phares, Manager, Nuclear Safety
and Performance Improvement
J. Sipek, Director - Licensing
Nathan Schloss, Economist
Office of the Attorney General
G. Stramback, Regulatory Licensing
Services Project Manager
General Electric Company
Chairman, DeWitt County Board
State Liaison Officer
Chairman, Illinois Commerce Commission

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REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	50-461/98013(DRS)
Licensee:	Illinois Power Company
Facility:	Clinton Nuclear Power Station
Location:	Route 54 West Clinton, IL 61727
Dates:	June 22-25, 1998
Inspector:	N. Shah, Radiation Specialist
Approved by:	G. L. Shear, Chief, Plant Support Branch 2 Division of Reactor Safety

EXECUTIVE SUMMARY

Clinton Nuclear Power Station, Unit 1
NRC Inspection Report 50-461/98013

This announced inspection included an evaluation of the effectiveness of aspects of the radiation protection (RP) program. Specifically, the inspectors reviewed air sampling activities in support of containment and drywell coatings work and the maintenance of whole body contamination monitoring and counting instrumentation. This report covers a four day inspection concluding on June 25, 1998, performed by a radiation specialist.

Plant Support

- Air sampling activities for the containment and drywell containment coatings work were properly performed and representative of work activities. Observations of work confirmed that workers were using good radiation work practices and that RP technician coverage was appropriate. However, the inspector noted that station procedures did not instruct personnel when to perform air sampling and did not contain a formal process for tracking the assignment of lapel air samplers and associated sample analysis results. These areas were being addressed by the licensee (Section R1.1).

- Whole body contamination monitoring and counting instrumentation was properly calibrated and maintained. RP oversight of this equipment, including instrument technician performance, was considered good. However, numerous documentation errors were identified in monitor calibration records and the documentation of instrument maintenance histories warranted improvement (Section R2.1).

Report Details

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Air Sampling for Containment and Drywell Coatings Work

a. Inspection Scope

The inspector reviewed the licensee's controls, planning and conduct of air sampling for the containment and drywell coatings work. The review consisted of a review of applicable records, interviews with workers and observations of work in progress.

b. Observations and Findings

As stated in NRC Inspection Report No. 50-461/98002(DRS), the licensee's respiratory assessment on the as-low-as-reasonably-achievable (ALARA) evaluation for the coatings work was considered good. The RP staff considered several variables (e.g., the levels of surface contamination, the degree of surface agitation, area ventilation, and surface consistency) to determine the likely airborne concentration levels produced during work. In most areas, the RP staff identified none to very low levels of surface contamination; however, in select levels of the 828' elevation of containment, surface contamination levels between 1000-10,000 disintegrations per minute were identified. These areas were decontaminated prior to any grinding. The licensee indicated that alpha contamination was not an issue based on good historical fuel performance and as verified by 10 CFR Part 61 waste characterization analyses results.

Because of the low surface contamination levels, the licensee elected not to use respirators for radiological hazards. However, some workers wore half-face respirators to protect against non-radiological hazards. High efficiency particulate filter (HEPA) vacuums were used to minimize potential airborne contamination levels and confirmatory air sampling was performed during the job at the HEPA vacuum exhaust and in the general work areas. This air sampling consisted of lapel air samples and grab samples in the worker's breathing zone and general work areas, respectively.

The inspector observed that the HEPA vacuums were properly positioned and through a comparison of radiation work permit (RWP) access records and air sample results, that air sampling was conducted when work was occurring. The air sample results were below the licensee's investigation level of 0.3 Derived Air Concentration (DAC), which was consistent with measurements from continuous air monitors (CAMs) located in the containment and drywell areas. Based on a discussion with workers and RP staff, no workers involved with the job were identified as having received an intake of radioactive material.

The inspector observed workers using good radiation work practices, including proper donning/removal of protective clothing, use of low dose areas and signing onto the appropriate RWP. Radiation protection technicians were also observed appropriately performing radiological job coverage activities. During these observations, several workers commented to the inspector that they felt the RP controls and oversight of the work was good.

However, the inspector identified that licensee procedures did not instruct personnel when to perform air sampling and did not contain a formal process for tracking the assignment of lapel air samplers and associated sample analysis results. Guidance on air sampling was contained in RP work instructions, but these were not considered formal, station procedures. Regarding the lapel samplers, the licensee did not track which workers were assigned lapel air samplers and, therefore, could not determine who may have been affected should a problem be observed with a particular air sample result. After interviewing RP personnel and reviewing selected, applicable records, the inspector concluded that the lack of procedural guidance had not resulted in any significant problems. Licensee RP management agreed with these conclusions and was addressing them through the station condition reporting process.

c. Conclusions

Air sampling activities for the containment and drywell containment coatings work were properly performed and representative of work activities. Observations of work confirmed that workers were using good radiation work practices and that RP technician coverage was appropriate. However, the inspector noted that station procedures did not instruct personnel when to perform air sampling and did not contain a formal process for tracking the assignment of lapel air samplers and associated sample analysis results. These areas were being addressed by the licensee.

R2 Status of RP&C Facilities and Equipment

R2.1 Calibration of Whole Body Contamination Monitoring and Counting Instrumentation

a. Inspection Scope

The inspector reviewed the maintenance and calibration of the licensee's whole body contamination and monitoring equipment. Specifically, the inspection focused on the FASTSCAN whole body counter (WBC), the gamma 40/60 portal monitors and the Personnel Contamination Monitors (PCMs) model nos. 1 and 2. The review included observation of daily source checks of the portal monitors and WBC counting activities, review of calibration and maintenance records, a walkdown of the monitors and interviews with workers.

b. Observations and Findings

In response to a previous violation (NRC Inspection Report No. 50-461/97017(DRS)), the RP group assumed responsibility for routine maintenance and calibration of the

whole body contamination and monitoring equipment. Two RP technicians were reassigned as instrument technicians and received training from the monitors' vendors. These technicians displayed good knowledge of industry standards and monitor operability history during interviews with the inspector.

The inspector observed an RP instrument technician correctly performing a source check on the gamma 40/60 portal monitors located at the security gatehouse, and an RP technician properly operating the WBC during a daily background check and routine worker counting.

The inspector verified that monitors' surveillances were performed and appropriately tracked. Associated procedures were consistent with the applicable industry standards and methodology for performing the stated surveillance. However, the inspector did identify numerous examples of minor documentation errors in the calibration records for the PCM-1s and gamma 40/60 portal monitors which were not identified by the station. For example, on some of the calibration records the activity of a cesium-137 check source (no. 222-115-2) was incorrectly stated (e.g., 258 nanoCuries vs 125 nanoCuries true value). The numerous problems indicated poor attention-to-detail by the RP staff performing the calibration and by the people responsible for the final reviews. The licensee acknowledged these examples and was planning corrective actions.

The inspector did not identify any long term performance issues with these monitors, but did identify a concern with the documentation of maintenance histories. Specifically, the inspector noted that on several occasions the technicians had replaced PCM-1 detector panels without documenting the reason for the replacement. In one example, a technician had replaced 11 of the 16 detector panels for a particular monitor without explanation. This practice prevented the licensee from determining if these replacements were due to a common failure mechanism. The licensee agreed with and planned to evaluate the inspector's observation.

c. Conclusions

Whole body contamination monitoring and counting instrumentation was properly calibrated and maintained. RP oversight of this equipment, including instrument technician performance, was considered good. However, numerous documentation errors were identified in monitor calibration records and the documentation of instrument maintenance histories warranted improvement.

R8 Miscellaneous RP&C Issues

(Closed) Violation 50-461/97017-03a, -03b: Failure to calibrate two PCMs in accordance with procedures. Immediate corrective actions including declaring the monitors inoperable and performing the calibration. As discussed in Section R2.1, the RP group was assigned oversight responsibility for the whole body contamination monitoring and calibration instrumentation. During this inspection, no additional examples of missed monitor surveillances were identified. The licensee's ongoing investigation regarding the timely scheduling and performance of preventive

maintenance activities will be reviewed as part of the NRC's ongoing startup 0350 inspection process. This violation is closed.

V. Management Meetings

XI Exit Meeting Summary

The inspectors presented the preliminary inspection findings to members of licensee management on June 25, 1998. The licensee acknowledged the findings presented and did not identify any of the documents reviewed as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Containment and Drywell Coatings Workers

W. Anderson, Facilities Group Leader (Coatings Applications)
J. Funk, Painter--North American Energy Services (NAES)
P. Groves, Carpenter--NAES
W. Janisch, Senior RP Technician
R. Woodward, Senior RP Technician--Bartlett Nuclear Services

Exit Meeting

H. Anagnostopoulos, General Supervisor--Radiological Operations
R. Campbell, RP Supervisor
K. Dahl, Senior RP Technician
J. Forman, Licensing
G. Hunger, Plant Manager
M. Lewis, Dosimetry Supervisor
J. Ramanuja, Supervisor Health Physics Analysis Group

INSPECTION PROCEDURES USED

IP 83750 Occupational Radiation Exposure

ITEMS OPENED, CLOSED OR DISCUSSED

Opened

No items were opened this inspection.

Closed

50-461/97017-03a, -03b	Violation	Failure to calibrate two PCMs per procedure (Section R8)

LIST OF ACRONYMS USED

ALARA	As-Low-As-Reasonably-Achievable
CAM	Continuous Air Monitors
DAC	Derived Air Concentration
HEPA	High Efficiency Particulate Air
IP	Inspection Procedure
PCM	Portal Contamination Monitor
WBC	Whole Body Counter
RP	Radiation Protection
RWP	Radiation Work Permits

LIST OF DOCUMENTS REVIEWED

Clinton Power Station Calibration Reports:

Annual FASTSCAN Body Counter Calibration (dated 8/14/97) (includes, Lung and Energy Efficiency calibrations)
Selected Shiftly FASTSCAN Quality Control Checks for June 1998
Calibration Data Forms for Gamma 60/40 Monitor Nos. 970248 (4/16/98); 970247 (1/10/98); 970246 (12/11/97); 970245 (12/11/97); 970244 (2/7/98); 970243 (12/10/97); 970242 (12/27/97); and 970241 (12/11/97)
Calibration data form for PCM2 Monitor No. 312, dated 5/7/98
Calibration data forms for PCM-1 Monitor Nos. 267 (6/19/98); 445 (6/8/98); 449 (4/15/98); 450 (5/18/98); 456 (6/3/98) and 1434 (5/22/98)

Clinton Power Station Procedure Nos.

CPS 4979.01 (rev. 7)	Abnormal Release of Airborne Radioactivity
CPS 7100.02 (rev. 0)	Air Sample Assay
CPS 7100.01 (rev. 1)	Radiological Surveys and Posting
CPS 7200.32 (rev. 0)	Drywell Entries
CPS 7600.10 (rev. 1)	Breathing Air Sampling
CPS 7910.90 (rev. 3)	Calibration of FASTSCAN Whole Body Counter
CPS 7911.48 (rev. 0)	Calibration of the Gamma 60/40 Portal Monitor
CPS 7911.52 (rev. 0)	Calibration of PCM-1
CPS 7911.53 (rev. 0)	Calibration of PCM-2

Radiation Protection Work instruction Nos.

18 (rev. 0)	Diagnostic Whole Body Counting
156 (rev. 0)	Guidance for Air Sampling
120 (rev. 1)	Radiological Job Coverage
160 (rev. 0)	Respirator & Engineering Controls Use Guidelines (*Note: This was subsequently canceled. The requirements will be issued into procedure no. CPS 7100.03)*

Radiation Work Permit (RWPs) Nos.

97001192.001	Walkdown Drywell to Identify Test Sites for Inservice Qualified Coatings
97001193.000	Remove Labels/Coatings and Clean/Paint all Drywell Elevations
97001196.000	Remove/Apply Coatings on Containment Wall Above Suppression Pool From Boat
97001198.000	Install Scaffold/Paint in High Radiation Area/Restricted High Radiation Areas in Containment
97001199.001	Inspections, Paint Chipping From Boat
97001201.000	Install/Remove Shielding, Build/Remove Scaffolding, Remove Paint from “A” and “B” RR Pump Motors Using Needle Guns.
98001057.002	Paint the Walls on 737' Containment.

98001105.003 Recoat Drywell Elevations 768', 737' and 723' to Include Support Activities for MWR D77850

Air Sample Results

Containment and Drywell Coatings

97-789	7/6/97	Drywell 723' Basement
97-760	6/27/97	Drywell Basement: Removal of Flat Flexible Material
97-759	6/27/97	Drywell Basement: Removal of Flat Flexible Material
97-763	6/29/97	730' Suppression Pool Outer Wall
97-817	7/12/97	737' Drywell HEPA #700 cfm-3 Exhaust
97-812	7/11/97	737' Drywell Access Vacuum Drum Change Out: Sponge Blast Materials
97-806	7/10/97	737' Drywell Exhaust on HEPA #700 cfm-1
97-805	7/10/97	737' Drywell Exhaust of Norclean Vacuum #vc002
97-789	7/6/97	723' Drywell Basement
97-790	7/7/97	732' Drywell “A” Recirculation Pump Platform (Backup for Sample No. 97-789)
98-372	6/17/98	Drywell Basement: Coatings
98-352	6/6/98	723' Drywell Coating Floor
98-349	6/6/98	723' Drywell Paint Chipping
98-347	6/5/98	723' Drywell Basement
98-346	6/5/98	723' Drywell Basement
98-295	5/28/98	767' Drywell HEPA Nos. 117 and 121
98-291	5/27/98	Vacuums to be used in the Drywell Upper Elevation for Paint Removal HEPA Nos. 136 and 108

Other Air Samples

Selected Routine Air Sample Results for June 1997 and March 1998

Air Monitoring Results (June 1997 and March 1998) for CAM Nos. 1 (803 ‘ Containment), 3 (803' Containment), 5 (781' Containment) and 7 (755' Containment)

Miscellaneous

Selective Radiation Controlled Area Access Records for 1997 - June 1998, for Containment and Drywell Coatings RWPs.

Radiological Engineering Evaluation, RP-92-08 (dated 5/4/92), regarding the resuspension factor for surface contamination based on smear and air sample data.

Memo (dated 8/9/93) from Ray Weedon, Radiation Protection Manager, regarding technical basis for contamination levels used in station procedure no. CPS 7500.10 (rev. 0) for estimating internal dose.